Art. XIV.—*The* Stenopelmatidæ *of New Zealand.*

By Captain F. W. Hutton, F.R.S.

[*Read before the Philosophical Institute of Canterbury, 4th November, 1896.*]

Plates XII.–XIII.

The *Stenopelmatidæ* are a small but important family of he *Locustodea*, distinguished by their long maxillary palpi and compressed tarsi, which have no lateral lobes. None of the New Zealand species show any trace of elytra, or wings. They are widely spread over the warmer parts of the earth; few, however, are known from South America, and none from Polynesia east of New Guinea and New Caledonia. They appear to be more numerous and more varied in New Zealand than in any other part of the world, for about thirty species, included in twelve genera, are recorded in this paper, and no doubt several others remain to be discovered.* Here they are generally known by their Maori name of *weta*.

The family can be divided into two well-marked sub-families—the *Anostostominæ*, with pads on the lower surfaces of their tarsi, and the *Dolichopodinæ*, without any pads. Each of these sub-families can again be broken up into two groups—the former by the presence or absence of auditory pits on the fore tibiæ, and the latter by the nature of the movable spines which generally occur on the apices of the femora.

The wetas are nocturnal insects, and are not abundant. Even in New Zealand, although common in places, they cannot always be found when wanted, and this will partly account for our ignorance of their habits. They are generally found in the forest, either climbing trees, or boring into the trunks, or hiding under loose bark or among fallen and rotten wood; a few, however, live underground or under stones. Most of them are solitary, but the cave-wetas live together in considerable numbers. All appear to climb well, but the larger species of *Anostostominæ* have almost lost the power of jumping; the *Dolichopodinæ*, however, hop and run swiftly.

According to Mr. J. G. O. Tepper, the food of these animals consists mainly, if not entirely, of self-caught insects.†

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* Tepper gives New Zealand as a locality for *Anostostoma australasiæ*, but I think this must be a mistake.

† "The *Gryllacridæ* and *Stenopelmatidæ* of Australia," Trans. Roy Soc. S. Australia, 1892, p. 172.

In New Zealand, however, they are generally thought to be vegetable feeders; and, indeed, this has been proved to be the case with a species of *Hemideina* by Mr. Brough, who kept one alive in captivity and fed it on nuts and bark;* also, it is difficult to see what animals the cave-wetas could catch.

The colours are usually some shade of brown—yellowish or reddish or purplish—and variety is obtained by darker and lighter shades.

Two different kinds of sounds are made by species of *Hemideina*. The first is called by Mr. J. Brough "a chattering kind of sound," emitted at night; a sound which he had often heard at night in the woods. Sir W. Buller states that *Hemideina thoracica* makes, when disturbed, a clicking noise, accompanied by a slow alternate movement of its powerful hind legs.† Mr. Hudson says of *H. megacephala*, "Both sexes when irritated emit a peculiar grating sound, which may be often heard at night in the forest, and is produced by the friction of the (hind) femur against a small file situated on each side of the second abdominal segment."‡ The sounding-organ here referred to consists of six or seven oblique, parallel, dark ridges near the lower margin of the second abdominal tergum, on each side (Plate XII., fig. 4*b*), and is equally developed in both sexes. There is nothing on the inner surface of the hind femur to correspond with this organ, but possibly the inner lower edge may be sufficiently sharp to make the file sound. The hind coxæ are too distant. I confess I do not see clearly how the sound can be made, and if it had not been for Sir W. Buller's observations I should have looked to the apical spines of the middle tibiæ for the striking instrument.

The genus *Deinacrida* has the same sounding-file, but it is reduced to one or two ridges. In *Onosandrus* there is no sounding-file, but several of the lobes of the anterior abdominal terga are roughened, and this may act as a sound-producing organ; however, I am not aware of any one having heard it. Mr. Brough also says of his captive *Hemideina*, "I found that he could bite fiercely, and when excited could hiss like an adder." This seems to be a different kind of sound from the other, and may be confined to the males. All those wetas which are known to make sounds possess well-developed auditory organs in the fore tibiæ, and, as they make the sounds at night, we may suppose that they are calling to each other, notwithstanding the fact that the organ is similar in

* Trans. N.Z. Inst., vol. xxviii., p. 336.
† Trans. N.Z. Inst., vol. iii., p. 35.
‡ "Manual of New Zealand Entomology," London, 1892, p. 113.

both sexes. The *Dolichopodinæ* have no auditory organ, and, apparently, they emit no sounds.

The value of this paper has been much enhanced by the kindness of the Rev. W. Colenso, F.R.S., in sending me the types of his species for examination; but it by no means pretends to be a complete monograph of our wetas. On the contrary, several points of nomenclature are left in a very unsatisfactory state, which can only be improved by a re-examination of types. The paper will, however, be useful in pointing out where our information is defective; it will, possibly, be the means of preventing a further growth of synonyms; and it will also enable field naturalists to name with tolerable exactness the wetas they may have observed. The cave-wetas are in the greatest confusion, and we do not know whether there are six or only two species. I should be very glad of any specimens that may be sent me. They may be dried and placed between pieces of linen, or they may be put into formolin or alcohol. They should not be pinned, as that destroys the sternum.

Sub-family ANOSTOSTOMINÆ.

Body nearly straight, broadest at the head or pronotum. Antennæ distant at their bases, the fastigium passing between them. Clypeus divided into post-clypeus and ante-clypeus. Pronotum transverse; mesosternum and metasternum bilobed. Abdomen longer than the thorax, very slightly compressed. Ovipositor tapering. Hind tibiæ with three pairs of apical spines, one superior and two inferior. Tarsi with pads on the lower surface, two on the first joint and one each on the second and third joints.

Some of the genera have a pair of large oval auditory pits on the proximal half of the fore tibiæ, one on each side, while in others there are no auditory pits. Most, if not all, have a sounding-organ on each side, near the lower margin of the second abdominal tergum. True ocelli are absent in all the New Zealand species known to me, but in a few there is an indistinct ocelliform spot on the fastigium.

SYNOPSIS OF THE GENERA.

Group ANOSTOSTOMÆ (with auditory pits on each side of the fore tibiæ).

Genus *Deinacrida*.

Fastigium sulcate above. Prosternum with two sharp spines. Fore femora with one, mid and hind femora with two, small apical spines. Mid tibiæ with two pairs of apical spines. Fourth joint of the hind tarsi longer than the other three together.

Genus *Hemideina*.

Fastigium foveolate above. Prosternum unarmed. Fore femora without apical spines; mid femora with one apical spine, or none; hind

femora with two apical spines or one, or none. Mid tibiæ with a pair of inferior and only one superior apical spines. Fourth joint of the hind tarsi shorter than the other three together.

Group Mimnermi (without any auditory pits on the fore tibiæ).

Genus *Onosandrus*.

Fastigium broad, not sulcate nor foveolate. Femora without apical spines. Fore and mid tibiæ with two pairs of apical spines. Hind tibiæ slender, armed above with two rows of small spines and a pair of large subapical spines in addition to the apical spurs.

Genus Deinacrida, White. (1842.)

Form large and robust. Head distantly punctured; fastigium Y-shaped, low and narrow between the antennæ, broadening and grooved above, passing gradually below into the front. No ocelli. Antennæ with the first joint large, subcylindrical; the second about half the length of the first, not swollen; the third nearly as long as the first, cylindrical, thinner than the second; the rest small. Eyes ovate. No ridges between the front and the genæ. Pronotum transverse, not projecting over the occiput; anterior and posterior margins nearly straight; the lobes short and rounded, not descending much beyond those of the mesonotum; the surface roughened.

Sternum broad; prosternum with two sharp spines; meso- and meta-sterna bilobed. Legs stout, the hind tibiæ two and a half to three times the length of the pronotum. Coxæ of the fore and hind legs as widely separated as those of the middle legs; those of the fore and middle legs spined. Fore femora with a minute apical spine on the inner (anterior) side. Mid and hind femora with a pair of apical spines. Fore and middle femora flattened below. Hind femora not much dilated, roundly angled above near the insertion; flattened below, and armed with two rows of strong spines. Fore and middle tibiæ with two pairs of apical spines, about equal in length. Hind tibiæ flattened above, and spined both above and below. Apical spines, three pairs, the two upper of which are subequal, the lower pair much smaller; the two lower pairs are articulated and movable. Second joint of the hind tarsi with a single blunt spine above; third joint nearly as long as the second; fourth joint longer than the other three together. Genitalia: Subgenital plate of male transverse, the posterior margin deeply concave between the insertions of the styles, the lobes carrying the styles very prominent; supra-anal plate rounded, the anal valves with a short black point on the outer margin of each, near the apex. Cerci short and stout. Subgenital plate of the female triangular, short, notched at the apex. Ovipositor slightly compressed at the apex, depressed at the base.

In the female the spines on the prosternum are further apart than in the male, and the head and thoracic nota are smoother. It is generally rather larger than the male, and the legs are proportionally shorter.

Locality.—New Zealand only.

KEY TO THE SPECIES.

Mid femora without spines below; post-margins of abdominal terga smooth:	
Fourth to eighth abdominal terga not emarginate	*D. heteracantha.*
Fourth to eighth abdominal terga emarginate posteriorly	*D. parva.*
Mid femora with spines below; post-margins of abdominal terga granulated	*D. rugosa.*

Deinacrida heteracantha. Plate XII., figs. 1–1*c*.

Deinacrida heteracantha, White, in Gray's Zool. Misc., 1842, part 2, p. 71; Dieffenbach's New Zealand, ii., p. 280; Zool. Voyage of "Erebus" and "Terror," Insects, p. 24, pl. 5, figs. 1, 1*a*, and 1*b*; Hochstetter's New Zealand, p. 169, wood-cut; Buller, Trans. N.Z. Inst., vol. iii., p. 35, and Zoologist, 1867, p. 849; Brunner, Mon. Stenopelmatides, p. 25. *Hemideina gigantea*, Colenso, Trans. N.Z. Inst., vol. xiv., p. 278 (1882).

Antennæ five or six times the length of the body. Front slightly wrinkled; post-clypeus very short; labrum nearly circular; mandibles not conspicuously keeled. Pronotum margined, symmetrically rugose, the lateral furrows smooth, the transverse furrow obsolete. Meso- and meta-nota slightly margined, transversely wrinkled on the posterior portion. Thoracic sterna smooth and shining, the lobes of the mesosternum produced into sharp spines, those of the metasternum into blunt spines. Abdominal segments slightly transversely striated above near their posterior margins, and, in the male, they are obscurely keeled from the fifth to the eighth. Fore and middle femora unarmed below. Hind femora, below, with four to seven strong spines on the outer and seven to twelve on the inner edge. Fore and middle tibiæ with four pairs of spines below; the middle tibiæ have also two spines above on the posterior side. Hind tibiæ, above, have four alternating spines in each row, the inner larger (occasionally a fifth is developed); below they have four spines in the inner and five in the outer row.

The sounding-organ is a single oblique ridge on each lobe of the second abdominal tergum.

In the female the abdominal segments are more strongly keeled above than in the male. The keel is most prominent on the fifth and sixth segments; the second and third segments are slightly emarginate, posteriorly, above.

Colours.—Pale tawny, the pronotum reddish, without any dark marks on the thoracic nota or tarsi; mandibles pale in colour. In the female the abdominal segments are dark-purplish on the posterior margins.

Average dimensions are: Length, 55mm.; length of pronotum, 15mm.; of thorax, 25mm.; of abdomen, 30mm.; of fore tibia, 28mm. ♂, 23mm. ♀; of hind tibia, 48mm. ♂, 42mm. ♀; of hind femora, 40mm. ♂, 36mm. ♀; of ovipositor, 28mm. Width of head, 13mm.; of pronotum, 17mm.

Localities.—The northern part of the North Island and the Great Barrier Island.

This species is the weta-punga of the Maoris. Sir W. Buller says that it appears to subsist chiefly on the green leaves of trees and shrubs. It climbs with great agility, and is sometimes found on the topmost branches of lofty trees, but generally on the low underwood of the forest. Dr. Hochstetter says that it lives in rotten wood and under the bark of trees.

Deinacrida rugosa. Plate XII., fig. 2.

Deinacrida rugosa, Buller, Trans. N.Z. Inst., vol. iii., p. 36, pl. v*b*., figs. 1 and 3 (1871).

Antennæ less than twice the length of the body. Front smooth; post-clypeus slightly transversely wrinkled, and the lateral margins swollen. Abdomen very thick and rounded. Pronotum margined. Meso- and meta-nota and abdominal terga roughened, their posterior edges ornamented with a row of granules; the abdominal terga, especially from the second to the fourth, slightly emarginate. Lobes of the meso- and meta-sterna not produced into spines. Middle femora, below, with three spines on the inner (posterior) edge; hind femora, below, with five strong spines on the outer (anterior) and five or six on the inner (posterior) edge. Tibiæ of fore and middle legs with four pairs of spines below, those of the middle legs with two spines above on the posterior edge; hind tibiæ, above, with four spines in each row, the inner considerably larger than the outer; below there are three spines in the inner and four in the outer row. The superior pair of apical spurs are fixed.

The sounding-organ on the second abdominal tergum consists, on each side, of two oblique ridges.

In the female the emarginations of the abdominal terga are not so distinct. The subgenital plate is long and truncated at the apex.

Colours.—Reddish-brown, meso- and meta-nota and the posterior margins of the abdominal terga darker. Mandibles pale, with black tips. Thoracic nota and tarsi with black marks. A blackish line on the upper surface of the tibiæ.

Length, 51mm. ♂, 58mm. ♀; of pronotum, 12mm.; of thorax, 23mm.; of abdomen, 29mm. ♂, 35mm. ♀; of ovipositor, 25mm.; of fore tibia, 15mm.; of hind tibia, 30mm.; of hind femur, 29mm. Width of head, 12mm.; of pronotum, 17mm.

Localities.—The type came from Wanganui, and was found underground. The foregoing description is taken from a pair from among stones on the beach at Stephens Island, in Cook Strait, presented to the Canterbury Museum by W. T. L. Travers, Esq.

Deinacrida parva.

Deinacrida parva, Buller, Trans. N.Z. Inst., vol. xxvii., p. 147 (1895).

I have not seen this species. It is said to be near *D. rugosa*, but the mid femora have no spines below, and the abdominal terga are deeply emarginate. Ochre-yellow, the pronotum dull reddish-brown. Length, 28mm.; of hind tibia, 20mm.

It comes from the Nelson Provincial District.

Genus Hemideina, Walker. (1869.)

Form large and robust, not less than an inch in length. Head smooth, often very large in the male. Fastigium rounded between the antennæ, flattened and foveate in the region of the ocellus, which is obsolete. Antennæ short, separated at their bases; first joint long and thick; the second shorter, cylindrical; the third longer than the second but shorter than the first; the rest small. Eyes pyriform. Usually a ridge (frontal ridge) between the front and the gena, running from the eye to the base of the mandible (not well marked in the female). Pronotum smooth, otherwise as in *Deinacrida*. Pro-sternum unarmed; lobes of the meso- and meta-sterna short and rounded. Legs stout, the hind tibiæ two or three times as long as the pronotum. Coxæ widely separated from each other, those of the first pair spined. Femora of fore legs without any apical spines, those of the middle legs with one, and those of the hind legs with two small apical spines, or with none. Fore and mid femora convex below, hind femora only slightly dilated, angled above near the insertion. Fore tibiæ usually with two pairs of apical spines. Mid tibiæ with an inferior pair and a single superior apical spine. Hind tibiæ flattened above, and with a few spines on each side, as well as some below; the apical spurs are three pairs, all of which are fixed; the superior pair is much longer than the others. Second joint of the hind tarsi with a single blunt spine above; the fourth joint shorter than the other three together. Genitalia: Subgenital plate of male nearly square, the posterior

margin straight or hollowed, the lobes carrying the styles slightly prominent. Supra-anal plate rounded. Cerci moderate. Subgenital plate in the female triangular, with the apex truncated or notched. Ovipositor as in *Deinacrida*.

The head of the male is variable in size. In the young the hind tibiæ are proportionally much thicker than in the adult. The colourless ante-clypeus is membranous, and can be partly folded inwards, carrying the labrum with it; this alters much the appearance of the face.

Localities.—New Zealand, Eastern Australia, and Lord Howe's Island.

Key to the Species.

a. Middle tibiæ without spines above; hind tibiæ, above, with 4 spines in the inner row.
  b. Hind tibiæ, above, with 3 spines in the outer row.
    c. Fore tibiæ, below, with 4 spines in each row .. .. *H. armiger*.
    cc. Fore tibiæ, below, with 3 spines in each row .. .. *H. thoracica*.
  bb. Hind tibiæ, above, with 4 spines in the outer row.
    c. Fore tibiæ, below, with 3 spines in each row .. .. *H. producta*.
    cc. Fore tibiæ, below, with 3 in outer and 4 in inner row .. .. *H. abbreviata*.
    ccc. Fore tibiæ, below, with 4 spines in each row.
      d. Pronotum dark coloured .. .. *H. megacephala*.
      dd. Pronotum pale with dark markings .. *H. figurata*.

aa. Middle tibiæ with a spine above; hind tibiæ, above, with 5 spines in the inner row.
  b. Middle femora with spines below .. .. *H. femorata*.
  bb. Middle femora unarmed below.
    c. Middle femora with a single apical spine *H. ricta*.
    cc. Middle femora without any apical spines.
      d. Pronotum blackish, margined with tawny .. .. *H. maori*.
      dd. Pronotum tawny, margined with blackish .. .. .. *H. broughi*.

Hemideina megacephala. Plate XII., figs. 3–3*c*.

Deinacrida megacephala, Buller, Zoologist, 1867, p. 850; Trans. N.Z. Inst., vol. iii., p. 36, pl. *vb*., fig. 2; Hudson, Man. N.Z. Entomology, pl. 17, fig. 8, and pl. 18, fig. 2. *Hemideina capitolina*, Walker, Cat. Dermaptera Saltatoria in the British Museum, part i., p. 161 (1869). *Deinacrida ligata*, Brunner, Monog. d. Stenop. and Gryll. in Verh. k. k. Zool. and Bot. Gesellsch., Wien, 1888, p. 24.

Head in the adult male very large. Front of epicranium smooth; frontal ridges curved outwards, rugose; a deep depression under each antenna; post-clypeus transversely wrinkled, separated from the ante-clypeus by a distinct ridge; labrum ovate; mandibles very long, not conspicuously keeled in front. Legs: Fore and middle femora without any spines

below; hind femora, below, on the outer edge, with three strong spines, followed by two or three small ones, and several minute spines on the inner edge; above there are from seven to ten minute spines, more or less rudimentary. Fore and middle tibiæ without any spines above, and the posterior superior apical spine of the fore tibiæ is sometimes missing. Below the fore tibiæ have four spines in each row, while the middle tibiæ have four in the outer (anterior) and two or three in the inner (posterior) row. Hind tibiæ, above, with four spines in each row, below there is a subapical pair, followed by two single spines. The subgenital plate in the male is longer than broad, and the apex, between the insertions of the styles, is straight. In the female the apex of the subgenital plate is retuse, or notched. In the female the head is smoother, there are no depressions under the antennæ, and no transverse ridge on the clypeus.

Colours.—The pronotum is brown, almost black in the young, with a thin, pale, longitudinal line, which is continued on the other thoracic nota and on the occiput. The mesonotum is generally paler than the rest of the body. The abdominal segments, above, are banded anteriorly and posteriorly with dark-brown, and usually there is a broad dorsal longitudinal stripe of the same colour in both sexes.

Length, 40mm.; of head, 28mm. ♂, 15mm. ♀; of pronotum, 9mm.; of thorax, 18mm.; of abdomen, 20mm.; of ovipositor, 21mm.; of fore tibia, 17mm.; of hind tibia, 21mm. ♂, 26mm. ♀; of hind femur, 22mm. ♂, 25mm. ♀. Width of the head, 13mm. ♂, 9mm. ♀; of pronotum, 12mm.

Localities.—Wellington; Stephens Island, in Cook Strait; Pelorus Valley; Westland; Lord Howe's Island (Brunner).

A common species, generally found among dead wood or in the hollow stems of old trees. Mr. Hudson says that *Melicytus ramiflorus* is a favourite tree, whose stems may often be seen pierced with large holes, out of which the insects emerge at night to feed on the leaves. They are strictly arboreal in their habits, exhibit great skill in walking along branches, and will climb up a thin stick with wonderful rapidity.*

Hemideina figurata.

Hemideina figurata, Walker, Cat. Dermaptera Saltatoria in the British Museum, part i., p. 162 (1869). *Hemideina tibialis*, Walker, *l.c.*, p. 164 (Young).

I have not seen this species. It appears to be distinguished from *H. megacephala* only by the colour of the pronotum. Probably it should be considered as a variety of that species.

Locality.—Wellington (Earl).

* "Manual of New Zealand Entomology," London, 1892, p. 113.

Hemideina armiger.

Deinacrida armiger, Colenso, Trans. N.Z. Inst., vol. xvii., p. 155 (1885). *Hemideina nitens*, Colenso, *l.c.*, vol. xxi., p. 193 (1889).

The head in the male is large, but narrower than in *H. megacephala*, to which it is closely allied. The fastigium is narrow and the fovea obsolete. The genæ are more rugose than in *H. megacephala*, and the front of the epicranium, as well as the post-clypeus, is transversely wrinkled. The frontal keels are curved outwards and rugose. The male has a deep depression under each antenna, and a transverse ridge across the clypeus. The labrum is ovate, and the mandibles are not conspicuously keeled in front. The spines on the femora and on the fore and middle tibiæ are the same as in *H. megacephala*. Hind tibiæ, above, have three spines in the outer and four in the inner row, the spines being longer than in *H. megacephala;* below there are a pair of subapical spines, followed by two single spines.

The subgenital plate in the male is like that in *H. megacephala*, but in the female it is slightly truncated, not notched, at the apex.

Colours.—The pronotum is pale, with dark markings in the depressions. The abdominal segments, above, are banded anteriorly and posteriorly with brown, paler than in *H. megacephala*. There is no longitudinal dorsal dark band in either sex. The female is darker in colour than the male.

Length, 40mm.; of head, 25mm. ♂, 11mm. ♀; of pronotum, 6mm.; of thorax, 13mm.; of abdomen, 24mm.; of ovipositor, 19mm.; of fore tibia, 15mm.; of hind tibia, 25mm.; of hind femora, 22mm. Width of head, 11mm. ♂, 8mm. ♀; of pronotum, 9mm.

Localities.—Wairoa and Forty-mile Bush, in Hawke's Bay; Manawatu, in Wellington Provincial District.

I have examined four males and three females, including the Rev. W. Colenso's types, and find the characters to be constant.

Hemideina thoracica.

Deinacrida thoracica, White, Voy. "Erebus" and "Terror," Insects, pl. 5, figs. 2, 2*a*, 1*c* (1846), no description; Buller, Zoologist, p. 850 (1867); Brunner, *l.c.*, p. 24.

A female in the Museum has the fastigial fovea elongate; slight depressions under the antennæ; the frontal ridges straight and low; the labrum slightly ovate. The fore and middle femora have no spines below; the hind femur has two strong spines followed by some minute ones on the outer edge. The fore and middle tibiæ have each two pairs of apical spines, and none above; below the fore tibiæ have

three spines in each row, the middle tibiæ four in the outer and three in the inner row. The hind tibiæ, above, have three spines in the outer and four in the inner row; below there are the usual subapical pair, followed by two single spines. The subgenital plate is truncated at the apex.

The colour is pale ochraceous with dark markings on the pronotum. Head and hind tibiæ dark-chestnut.

Length, 33mm.; of head, 12mm.; of pronotum, 7mm.; of thorax, 14mm.; of abdomen, 19mm.; of ovipositor, 18mm.; of fore tibia, 13mm.; of hind tibia, 21mm.; of hind femur, 21mm. Width of head, 7mm.; of pronotum, 9mm.

Locality.—Auckland.

According to Sir W. Buller, this species lives in decayed wood, particularly the dried stems of the tutu (*Coriaria ruscifolia*) and the branches of *Griselinia lucida*, into which it bores. No complete description has as yet been published.

Hemideina producta.

Hemideina producta, Walker, Cat. Derm. Salt. in B.M., p. 163 (1869). *Hemideina abbreviata*, Walker, *l.c.*, p. 163 (1869).

I have not seen this species. According to the description, it differs from *H. thoracica* in the hind tibia having four spines in each row above, and in the colours, the hind borders of the abdominal segments being piceous. *H. producta* is said to have three spines on each side below in the fore and middle tibiæ, while *H. abbreviata* is said to have four in the outer and three in the inner row. *H. abbreviata* is also said to have been captured in a cave by Mr. H. Drew, but as no one else has found a specimen of *Hemideina* in a cave this may perhaps be a mistake.

Locality (?), probably the North Island.

Hemideina femorata, sp. nov. Plate XII., figs. 4–4*b*.

Head in the male not very large; front and post-clypeus transversely wrinkled, the genæ granulated below. The fastigium is narrow, the fovea slight and elongated. The frontal keels are straight from the eye to the mandible. The post-clypeus is shorter than the ante-clypeus, the two portions being divided in the male by a slight ridge. The mandibles in the male are sharply keeled anteriorly, and project much in front of the clypeus. Labrum nearly circular. The pronotum has the margins of the lateral lobes horizontal, straight, slightly rounded at the corners. Fore femora unarmed below; middle femora, below, with two or three sharp spines near the apex on the outer (anterior) edge; hind femora with two to four sharp spines below, near the apex, on the outer edge, none on the inner; above there are from six to ten minute but sharp spines. Fore tibiæ, below,

with four spines in each row; middle tibiæ, below, with four spines in the anterior and three in the posterior row; above there is a single spine on the posterior side beyond the middle. Hind tibiæ, above, with four spines in the outer and five in the inner row; below there are the usual subapical pair, followed by two single spines on the outer side. The subgenital plate in the male is longer than broad, and concave at the apex between the insertions of the styles. In the female the head is smaller, and the genæ are smoother. The subgenital plate is very slightly notched at the apex.

Colours.—Head chestnut-brown, darker in the male. Pronotum and mesonotum pale-tawny, with dark-brown markings; a thin, pale, longitudinal line on the thoracic nota and on several of the abdominal terga. Abdominal segments, above, pale-tawny with broad posterior and narrow anterior dark-brown borders.

Length, 40mm.; of head, 18mm. ♂, 12mm. ♀; of pronotum, 8mm.; of thorax, 16mm.; of abdomen, 23mm.; of ovipositor, 15mm.; of fore tibia, 13mm.; of hind tibia, 20mm.; of hind femur, 20mm. Width of head, 11mm. ♂, 9mm. ♀; of pronotum, 11mm.

Localities.—Manawatu, Wellington District; and Banks Peninsula.

I have examined two males and eleven females of this species. It is easily recognised by the spines on the lower surface of the middle femora.

Hemideina ricta, sp. nov.

This species closely resembles the last, but differs from it in the following particulars: The head of the male is larger; the front and post-clypeus are rugose (not wrinkled), and the genæ are smoother. The post-clypeus is longer than the ante-clypeus, the two portions not separated by a ridge. Middle femora without any spines below.

Length, 40mm.; of head, 22mm. ♂, 11mm. ♀; of pronotum, 8mm.; of thorax, 17mm.; of abdomen, 20mm.; of ovipositor, 17mm.; of fore tibia, 14mm. ♂, 11mm. ♀; of hind tibia, 21mm. ♂, 17mm. ♀; of hind femur, 21mm. ♂, 18mm. ♀. Width of head, 13mm. ♂, 7mm. ♀; of pronotum, 13mm. ♂, 10mm. ♀.

Localities.—Banks Peninsula and South Canterbury.

I have examined two males and five females of this species.

Hemideina maori.

Deinacrida maori, Pictet et Saussure, Bull. de la Soc. Entomol Suisse, vol. viii., p. 296., pl. 1, fig. 2 (1891).

This species is smaller than any of the foregoing. The following description and measurements are taken from a pair

of co-types presented to the Canterbury Museum by Mr. H. Suter, the discoverer of the species:—

Fastigium broad, the fovea shallow. The lateral margins of the lobes of the pronotum are oblique, ascending posteriorly. The fore and middle femora have no apical spines, and none below; the hind femur of the male has an apical spine, but it is situated below, not laterally. It is absent in the female. Below there are, in both sexes, from two to four small spines. Both fore and middle tibiæ have a pair of inferior apical spines, but only one of the superior pair, which is on the inner side; below they have four spines in each row, and the middle tibia has a single spine in front, beyond the middle. The hind tibiæ, above, have four spines in the outer and five in the inner row; below there are three spines in the outer and two in the inner row. The fourth joint of the hind tarsus is short, not longer than the first. Supra-anal plate obtusely notched; the subgenital plate in the male deeply concave between the insertions of the styles; in the male it is large and slightly notched at the apex. The ovipositor is more compressed than usual.

Colours.—Dark; the pronotum bordered all round, and the abdominal terga bordered posteriorly, with testaceous or tawny. (In alcohol.)

Length, 25mm.; of head, 13mm. ♂, 10mm. ♀; of pronotum, 5mm.; of thorax, 9mm.; of abdomen, 15mm.; of oviduct, 13mm.; of fore tibia, 7mm.; of hind tibia, 12mm.; of hind femur, 11mm. Width of head, 7mm.; of pronotum, 8mm.

Localities. — Hooker Valley, South Canterbury; Mount Captain, Hanmer Plains, at about 3,000ft. above the sea. (Dendy.)

In the absence of apical spines on the femora, this species differs much from all the others.

The following are the colours of a live specimen collected by Professor Dendy on Mount Captain: Head shining-black, ante-clypeus white, with two brown spots. Antennæ reddish-brown, paler towards their tips. Legs pale reddish-brown, the spots on the outer surface of the hind femora and the spines on the hind tibiæ black. Pronotum shining-black, margined all round with dirty-white, clouded with fuscous. Abdominal segments, above, shining-black anteriorly; posteriorly white, with dead-black spots and vermiculations. The length of this specimen, which is a male, is 38mm.

Hemideina broughi.

Deinacrida broughi, Buller, Trans. N.Z. Inst., vol. xxviii., p. 324 (1896).

I have not seen this species, but it appears to be near *H. maori*, as the four anterior femora are said to be free from

spines. It is, however, much larger, and has different colours. The length is 57mm.; of ovipositor, 19mm.; of hind tibia, 38mm.; of hind femur, 38mm. The colours are pale reddish-brown, with the head and edges of the pronotum dark.

Locality.—Mountainous districts of Nelson. Living in holes which it bores in the trunks of trees.

Genus ONOSANDRUS, Ståll. (1878.)

Size moderate. Head small, the fastigium broad, flattened or rounded. Antennæ with the first joint thick, longer than broad; second joint shorter, not swollen; third joint about twice as long as the second; the rest small. Pronotum longer than broad, more than half the length of the thorax, narrowed anteriorly. Mesosternum and metasternum deeply bilobed. Legs medium; coxæ of fore and middle pairs spined; femora unarmed, those of the hind legs much dilated, continuously rounded above near the insertion, slightly sulcate below. Fore and mid tibiæ with two pairs of apical spines. Fore tibiæ without auditory pits. Hind tibiæ with three pairs of apical spines, of which the inferior are the shortest and the superior the longest; those on the inner side are as long as the first joint of the tarsus; those on the outer side are shorter; above the tibiæ are rounded with two rows of short spines terminated by a subapical pair as long as the superior apicals. Pads on the tarsi well developed; none of the joints spined; fourth joint shorter than the other three together. Supra-anal plate truncated. Cerci moderate. Subgenital plate of the male transverse, the apex between the insertion of the styles straight or slightly hollowed; the lobes carrying the styles not prominent. In the female the subgenital plate is triangular, the apex sharply pointed. The ovipositor is much compressed.

There is no sounding-file like that in *Hemideina*, but the ends of the terga of the first to the sixth abdominal segments are roughened, and these may serve as a sounding-organ.

Localities.—New Zealand, India, and Africa.

Ståll established this genus in 1878; it appears to be identical with *Libanasa*, of Walker, which was made in 1869.

KEY TO THE SPECIES.

a. Fore tibiæ, below, with 4 spines in each row.
  b. Mid tibia, above, with 2 or 3 spines on inner side .. *O. pallitarsis*.
  bb. Mid tibia, above, with 4 spines on inner side.
    c. Mid tibia, above, with 2 spines on outer side.. *O. focalis*.
    cc. Mid tibia, above, with 3 spines on outer side.. *O. maori*.
aa. Fore tibiæ, below, with 3 spines in each row .. *O. maculifrons*.

Onosandrus pallitarsis. Plate XII., figs. 6, 6*a*.

Libanasa pallitarsis, Walker, Cat. Dermaptera Saltatoria in British Museum, part v., suppl., p. 24 (1871).

Head smooth, the front very faintly striated. Pronotum

margined, the lobes rounded, the lateral furrows obsolete. Hind femora transversely grooved on upper side only; those of the female with a short apical spine on the inner side. Fore and mid tibiæ, below, with four spines in a row; above the fore tibiæ have one anterior spine only, and the mid tibiæ have two anterior and two or three posterior spines. Hind tibiæ, above, with eight small spines in each row, in addition to the subapical spines; below there are three small distant spines. The subgenital plate of the male has the apex nearly straight between the insertions of the styles.

Colours.—Dark-brown or black, with a white spot on each side of the fastigium and a pale-tawny stripe down the centre of the head and back, especially well marked on the pronotum. A large patch of the same pale colour on the lobes of each of the thoracic nota, and some on the sides of the abdomen. Tarsi pale-yellowish. Some specimens are nearly all dark-brown.

Length, 23mm.; pronotum, 5 mm.; thorax, 8 mm.; abdomen, 14mm.; ovipositor, 11mm.; fore tibia, 4mm. ♂, 5mm. ♀; hind tibia, 9mm. ♂, 12mm. ♀; hind femur, 11mm. ♂, 14mm. ♀. Width of pronotum, 5mm.

Localities.—Wellington, Canterbury, Otago.

Common; generally in the earth among the roots of plants, sometimes in rotten wood. I have a specimen from the Hooker Valley.

Onosandrus focalis, sp. nov. Plate XII., figs. 5–5*d*.

Male: Head smooth, very slightly wrinkled in front; fastigium very broad and flat, the width more than three times that of the first joint of the antennæ. Thoracic nota margined, the lobes of the pronotum descending considerably below the others, uniformly rounded. Hind femora sulcate below, the transverse grooves on outer surface obsolete. Fore and mid tibiæ, below, with four spines in each row; above the fore tibia has two spines on the inner side; the middle tibia has two spines in the outer and four in the inner row. Hind tibiæ rounded above, with eight small spines in the inner and six in the outer row, besides the subapical spurs; below there are a pair of spines just behind the apical spurs, followed by four single spines. The first to the fifth abdominal terga have the anterior half of their lobes roughened, the posterior half smooth. Supra-anal plate triangular, broadly truncated at the apex. Cerci short, curved, erect. Subgenital plate distinctly concave at the apex between the insertions of the styles.

Colours.—Head black; a spot on each side of the fastigium, the lower part of the fastigium, the genæ, and the clypeus white. Clypeus with two black spots. Upper portion of clypeus and part of the face grey. Body black above, the front

margin of the pronotum and the posterior margins of all the thoracic nota and abdominal terga greyish-white; below greyish-white.

Length, 27mm.; pronotum, 7mm.; thorax, 11mm.; abdomen, 13mm.; fore tibia, 8mm.; hind tibia, 14mm.; hind femur, 17mm. Width of pronotum, 8mm.

Locality.—Ophir, in Central Otago.

Described from a single specimen only. The female is not known.

Onosandrus maori.

Onosandrus maori, Pictet et Saussure, Bull. de la Soc. Entomol. Suisse, vol. viii., p. 302, pl. i, fig. 4 (1891).

Fastigium rounded, the apex subangular; ocelli very distinct. Lobes of the pronotum much longer than high, ascending gradually posteriorly. Mid tibiæ, above, with 3–4 spines. Hind tibiæ keeled above with 10–12 short spines on each side; below they are rounded, with a small spine on each side beyond the middle.

Colours.—Dark-chestnut, spotted with testaceous.

Length.—11mm.; of pronotum, 5mm.; of hind femur, 11mm.

The males have the hind femora more dilated than the females.

Locality.—White-horse Hill, Hooker Valley (H. Suter).

I have not seen this species, and the above diagnosis is abridged from Pictet and Saussure's description.

Onosandrus maculifrons.

Libanasa (?) *maculifrons,* Walker, Cat. Derm. Salt. B.M., p. 209 (1869).

Fore tibiæ with three rather long spines on each side.

Colours.—Black; tawny beneath and on the sides of the abdomen. Head with a band of four testaceous spots on the front and one on each side of the face, which is also testaceous. Legs testaceous, slightly clouded with piceous.

Length, 16mm.

I have not seen this species, and the diagnosis is taken from Walker. There is a specimen from New Zealand in the British Museum, presented by Sir A. Smith.

Sub-family DOLICHOPODINÆ.

Body curved longitudinally, widest at the posterior margin of the mesonotum. Antennæ approximated at their bases. Clypeus not divided into ante-clypeus and post-clypeus. Pronotum as long as or longer than broad. Abdomen short, often shorter than the thorax, rather compressed; ovipositor sabre-shaped, much compressed, not tapering. Fore tibiæ without auditory pits. Hind tibiæ with from two to four pairs of

apical spines. Tarsi without pads on their lower surfaces; the first joint elongated, longer than the fourth. No ocelli in any of the New Zealand species.

SYNOPSIS OF THE GENERA.

Group Ceuthophili.

Apical spines on the femora, when present, short, stout, and coloured. Spines on the upper surface of the hind tibiæ usually remote from each other, regular in size and in distance.

Genus *Talitropsis.*

Femora with a single short apical spine, or none. Fore tibiæ with a pair of inferior apical spines; middle tibiæ with a pair of inferior apical spines and a single superior spine, on the inner side; hind tibiæ with two pairs of rather short apical spurs, nearly equal in length.

Genus *Ischyroplectron.*

Fore and middle femora each with a pair of strong apical spines; hind femora with one. Fore and middle tibiæ each with two pairs of apical spines; hind tibiæ with four pairs of apical spurs, of which the upper-intermediate are much longer than the others.

Genus *Gymnoplectron.*

Fore femora with one, middle and hind femora each with a pair of short apical spines. Fore and middle tibiæ with two pairs of apical spines; hind tibiæ with four pairs, of which the upper-intermediate are much longer than the others.

Genus *Pachyrhamma.*

Fore and middle femora each with a single apical spine, the hind femora with a pair. Fore and middle tibiæ with two pairs of apical spines; hind tibiæ with three pairs, of which the upper pair is much longer than the others.

Group Rhaphidophoræ.

Apical spines on the fore and middle femora, when present, acicular and colourless; none on the hind femora. Spines on the upper surface of the hind tibiæ irregular in size and distance, usually crowded.

Genus *Pleioplectron.*

Fore femora with one, or two, and middle femora with two, apical spines. Fore and middle tibiæ with two pairs of apical spines, of which the superior is much the longer.

Genus *Neonetus.*

Fore and middle femora each with a pair of apical spines. Fore tibiæ with a pair of inferior, and middle tibiæ with a pair of superior, apical spines; hind tibiæ with two pairs, of which the upper pair is much the longer.

Genus *Isoplectron.*

Fore femora without apical spines; middle femora with one only. Fore tibiæ with an inferior pair of apical spines; middle tibiæ with an inferior pair, and a single superior on the posterior side; hind tibiæ with two pairs, which are short and nearly equal in length.

Genus *Pharmacus.*

All the femora without apical spines. Fore and middle tibiæ with an inferior pair of apical spines, and a single superior on the posterior side; hind tibiæ with two pairs, moderate in size, the superior the longer.

Genus *Macropathus*.

All the femora without apical spines. Fore and middle tibiæ with an inferior pair of apical spines, and a single superior on the posterior side; hind tibiæ with three pairs of apical spines, of which the superior pair is much the longest, and the inferior pair the shortest.

Genus TALITROPSIS, Bolivar. (1882.)

Form small and robust. Vertex depressed; fastigium narrow, sulcated. Antennæ closely approximated at their bases, thick, evenly hairy, three or four times the length of the body; first joint much broader than the eyes, flattened; the second shorter, inflated; the rest cylindrical; the third rather longer than the second. Eyes pyriform, prominent in the male. Pronotum not more than half the length of the thorax, the inferior margins of the lobes straight. Metasternum with a low rounded elevation in the middle. Legs stout, covered with hair, except the hind femora, which are much dilated and polished; the hind tibiæ less than three times the length of the pronotum. Fore coxæ spined, the two approaching each other; hind coxæ as far apart as the middle ones. Femora without apical spines, or with a short stout one on the inner side. Fore tibiæ with a pair of inferior apical spines, and others below; middle tibiæ with a pair of inferior and a single superior apical spine, and others below; hind tibiæ with two pairs of apical spurs, both coloured and short, but the superior rather longer than the inferior pair; below they are without spines. First and second joints of the hind tarsi armed with a pair of strong spines at the apices; third joint very short; the fourth about equal to the other three together. Supra-anal plate with a semicircular notch at the apex. Cerci moderate, slender, depressed. Subgenital plate in the male rather transverse, inflated, trilobed, the styles very short. Subgenital plate in the female with three angular notches on the posterior margin. Ovipositor compressed, acuminate.

Locality.—New Zealand only.

The apical spines on the hind tibiæ have very few hairs.

Talitropsis sedilotti. Plate XII., figs. 7, 7*a*.

Talitropsis sedilotti, Bolivar, Ann. Soc. Ent. France (6), ii., p. 462 (1882). *Talitropis sedilloti*, Brunner, Mon. Stenop., p. 312, fig. 36 (1888).

Inferior margins of the pronotum slightly descending posteriorly; the posterior angles nearly rectangular. The lobes of the mesonotum and metanotum descend posteriorly more rapidly. Middle and hind femora with a small apical spine; fore femora without any; hind femora, below, with two or three small spines on the inner and one to three on the outer edge. Fore tibiæ, below, with two pairs of spines.

Middle tibiæ, below, with two spines on outer (anterior) and one on inner (posterior) side. Hind tibiæ, above, with eight large equal spines in the inner and seven in the outer row; inside each of these rows there is a row of small irregular spinelets between the larger spines; below they are unarmed. Second joint of the hind tarsi less than half the length of the first. Subgenital plate in the male trilobed between the insertions of the styles; the middle lobe rounded at the apex, keeled, and broader than the lateral lobes, which are acute.

Colours.—Variable: brown or tawny, variegated with darker; a pale longitudinal band on the pronotum; fore and middle tibiæ transversely banded.

Length, 16mm.; pronotum, 5mm.; thorax, 10mm.; abdomen, 6mm.; ovipositor, 14mm.; fore tibia, 7mm.; hind tibia, 12mm.; hind femur, 12mm. Width of mesonotum, 5mm.

Localities.—Pelorus Valley, Marlborough; Dunedin; Southland. The type, which is a female, is said to be ferruginous in colour, and the legs are slightly longer.

The Southland specimen, which is a female, is much more hairy than the others, the spines on the fore and mid tibiæ being almost buried. The hind femora, below, have two strong spines on each side, followed by four minute spines in the outer and two in the inner row. The colour is uniform dark-brown, with the legs banded. Perhaps it should be considered as a distinct species.

This species is remarkable for having four rows of spines on the upper surface of the hind tibiæ.

Talitropsis crassicruris, sp. nov. Plate XII., figs. 8, 8*a*.

Inferior margins of the lobes of the pronotum descending posteriorly, the posterior angles rectangular, with the corners rounded off. Lobes of mesonotum and metanotum with their inferior margins slightly rounded; all three in one line. Femora without any apical spines; hind femora, below, with two spines on the outer and one on the inner edge. Fore tibiæ, below, with two pairs of spines; middle tibiæ, below, with two on the anterior and one on the posterior side. Hind tibiæ much dilated and flattened above; the spines are nine on the outside and eight on the inside, equal in size, and at equal distances; no spines below. Second joint of the tarsi less than half the length of the first; first and second joints with a pair of strong apical spines. Subgenital plate of the male trilobed, the central lobe rather narrow, forming a strong keel. Cerci moderate; ovipositor rather short.

Colours.—Pale-tawny, variegated with brown on the upper surface; a pale longitudinal band on the pronotum; fore and middle tibiæ banded in the male.

Length, 23mm.; pronotum, 6mm.; thorax, 12mm. abdomen, 10mm.; ovipositor, 10mm.; fore tibia, 6mm.; hind tibia, 11mm.; hind femur, 12mm. Width at mesonotum, 6mm.

Locality.—Banks Peninsula and the Chatham Islands. Easily recognised by its thick hind tibiæ.

Talitropsis irregularis, sp. nov. Plate XII., fig. 9.

Not so hairy as the other species. Anterior margin of pronotum projecting over the occiput; inferior margins of the lobes horizontal. Fore and mid femora each with one rather long and weak colourless apical spine on the inner side; hind femora without apical spines, below with six minute spines on the outer and seven or eight on the inner edge. Fore tibiæ, below, with two pairs of spines; middle tibiæ, below, with two spines on posterior and one on the anterior side; hind tibiæ with the superior apical spurs longer than in other species of the genus; above there are thirteen spines in each row, equal in size and at regular distances. Second joint of the hind tarsus more than half the length of the first. Supra-anal plate short, concave at the apex. Supra-genital plate of male with the lateral lobes irregular and almost blended with the central lobe, which is broad and rounded at the apex, not keeled. Cerci rather long.

Colours.—Pale-tawny, variegated with brown; fore and middle tibiæ with dark bands.

Length, 12mm.; pronotum, 3mm.; thorax, 6mm.; abdomen, 6mm.; fore tibia, 6mm.; hind tibia, 9mm.; hind femur, 9mm. Width at mesonotum, 4mm.

Locality.—Auckland, under bark. (Suter.)

Described from a male; the female is unknown.

This species has apical spines on the fore and mid femora like those of *Pleioplectron*, and from this alone it would be included in the next group. But the apical spines of the fore and middle tibiæ, and the equal and equidistant spines on the upper side of the hind tibiæ, keep it in *Talitropsis*. The subgenital plate of the male is also nearer that of *Talitropsis* than that of *Pleioplectron*.

Genus Ischyroplectron, gen. nov.

Size and form medium. Head perpendicular: antennæ short, slender, closely approximated but not touching at their bases; the first joint large, flattened, rather longer than broad; the second shorter, slightly inflated in the middle; the third much longer, slightly inflated at the base; the others much shorter, cylindrical. Fastigium high, narrow, deeply sulcated; eyes semicircular, not prominent. Pronotum not projecting much over the head. Metasternum with a blunt

tubercle in the middle. Legs rather long and slender, the hind femora but slightly dilated; coxæ of the fore legs spined, widely separated from each other, those of the hind legs closer together but separated by the first abdominal segment. Fore and middle femora with an apical pair of strong, movable, brown spines; those of the hind legs with a short apical spine on the inner side, as well as some small spines below. Tibiæ of fore and middle legs unarmed above, those of the hind legs unarmed below. Fore and middle tibiæ with two pairs of apical spines; the hind tibiæ with four pairs, of which the superior intermediate pair are very broad and strong, the inner and outer about equal; the pair below them not half the length of the superior pair; the other two pairs are quite small, and placed above and below the long spurs; the three lower pairs are articulated to the tibia, the upper pair are fixed; none of the spurs of the hind tibiæ have hairs. First and second joints of the hind tarsi with a pair of strong apical spines above; the fourth joint shorter than the first. Supra-anal plate roughened, concave at the apex. Cerci rather long, erect, curved, stout. Subgenital plate of the male transverse, rather inflated, the apex trilobed; styles short, the lobes bearing them rounded, not at all prominent.

Locality.—Bounty Islands only.

Ischyroplectron isolatum. Plate XII., figs. 10, 10*a*; Plate XIII., fig. 10*b*.

Ceuthophilus (?) *isolatus*, Hutton, Trans. N.Z. Inst., xxvii, p. 175 (1895).

Head smooth and shining; antennæ with short hairs. Lobes of the pronotum thickly margined, especially behind, their inferior margins nearly horizontal, slightly rounded; those of the mesonotum thickly margined, rounded, reaching rather below the lobes of the pronotum; metanotum not margined. Fore and middle femora unarmed below; hind femora, below, with six small spines on the inner and numerous small denticulations on the outer edge. Fore and middle tibiæ with three pairs of spines below; hind tibiæ, above, with eleven to thirteen distant spines, which are irregular in size; both surfaces rounded and slightly roughened. Subgenital plate of male with the middle lobe narrower and shorter than the lateral lobes, forming a rounded keel.

Colours.—Brown, the thorax and abdomen variegated with yellowish, the darker colour on the pronotum forming an indistinct St. Andrew's cross. Posterior margins of pronotum and mesonotum brown. Head pale; antennæ dark. Hind tibiæ and tarsi reddish-brown.

Length, 34mm. ♂, 29mm. ♀; pronotum, 9mm. ♂, 8mm. ♀; thorax, 16mm.; abdomen, 18mm.; ovipositor, 20mm.; fore

tibia, 13mm. ♂, 11mm. ♀; hind tibia, 30mm. ♂, 20mm. ♀; hind femur, 24mm. ♂. Width of mesonotum, 10mm.

Locality.—Bounty Island, under rocks. (Fairchild.)

Genus Gymnoplectron, gen. nov.

Form large and slender. Head inclined under the body: antennæ slender, very long, approximated but not touching at their bases; the first joint large, longer than broad; the second shorter, rather inflated; the rest cylindrical; the hairs very short, none on the basal joints. Fastigium narrow, slightly sulcate. Fifth joint of the maxillary palpi considerably longer than the fourth, which is about equal to the third. Anterior border of the pronotum slightly rounded, projecting over the occiput; the posterior border straight; lateral lobes not projecting below those of the mesonotum. Sternum narrow. Legs long and slender; coxæ of the fore and hind legs nearly touching its opposite, the first segment of the abdomen entirely behind the hind coxæ; those of the fore legs spined. All the femora deeply grooved and spined below; fore femora with a small, blunt, coloured, apical spine on the inner side; middle and hind femora with a pair of blunt apical spines. Fore and middle tibiæ with two pairs of apical spines, unarmed above. Hind tibiæ with four pairs of apical spines, of which the superior intermediate are twice as long as those just below them, and the inner is longer than the outer; the superior and inferior pairs are small; all four pairs are articulated to the tibia, and all are without hairs; below they are rounded and unarmed, above they are flattened and armed with long spines. First and second joints of the hind tarsi terminating in a pair of rather strong spines; first joint longer than the fourth, but shorter than the other three together. Supra-anal plate very short, the posterior margin slightly concave. Cerci rather long and slender, erect. Subgenital plate of male linear, rounded at the apex and grooved below, projecting beyond the supra-anal plate; styles short and thick, inserted at each side of its base.

Locality.—New Zealand only.

Gymnoplectron longipes. Plate XII., figs. 11, 11*a*; Plate XIII., fig. 11*b*.

Hemideina longipes, Colenso, Trans. N.Z. Inst., vol. xix., p. 145 (1887). *Macropathus maximus*, Buller, Trans. N.Z. Inst., vol. xxvii., p. 145 (1895).

Head smooth; fastigium rather low, broadening out below the antennæ and gradually passing into the front. Pronotum margined, the inferior margins of the lobes horizontal, the corners only rounded. Lobes of the mesonotum and metanotum rounded, their anterior angles obliquely cut off. Inferior

keels of all the femora with numerous blunt serrations. Fore femora with four spines on the inner keel, none on the outer; middle femora with three spines on each keel; hind femora with about twenty-two spines on the outer keel and about twelve larger spines on the inner keel. Fore and middle tibiæ with three pairs of spines below. Hind tibiæ, above, with thirteen to eighteen long spines in the outer and twelve in the inner row, all nearly equal and at equal distances; longest of the apical spurs not more than half the length of the first joint of the tarsus; all the tibiæ finely granulated. Sides of the abdominal terga with scattered granules.

Colours.—Chestnut-brown, darkening on the abdomen, hind tibiæ, and tarsi. Fore and middle tibiæ and tarsi yellowish, the articulations chestnut-brown.

Length, 30mm.; pronotum, 10mm.; thorax, 18mm.; abdomen, 12mm.; fore tibia, 26mm.; hind tibia, 56mm.; hind femur, 49mm. Width of mesonotum, 11mm.

Localities.—Norsewood, on totara-trees; Coromandel, near Auckland.

Described from two male specimens, one of which is Mr. Colenso's type. The female is unknown.

Genus Pachyrhamma, Brunner. (1888.)

Body rather stout, legs slender. Head vertical. Antennæ thick, very long, touching at their bases, covered with long hairs; first joint much longer than broad; the second cylindrical, short; the third narrower but not much longer than the second, shorter than the first. Eyes large, semicircular. Fastigium rising abruptly, sulcate. Face flat, shining, glabrous. Maxillary palpi with the third and fourth joints subequal, the fifth rather longer. Pronotum roundly produced in front over the occiput, truncated behind. Sternum very narrow. Metasternum with an elevated transverse ridge. Legs long; fore coxæ touching each other; hind coxæ closely approximated but not quite touching; fore coxæ armed with a spine. Fore and middle femora each with a short, stout, apical spine on the inner side; hind femora with a pair of apical spines; all the femora sulcate below. Fore and middle tibiæ with two pairs of apical spines. Hind tibiæ with three pairs of apical spines, of which the superior pair is the longest, the inferior pair the shortest; above sulcate with numerous small equal and equally-distant spines; below rounded and finely granulated. The spurs on the hind tibiæ with long hairs. First and second joints of hind tarsi with a pair of small apical spines only. Supra-anal plate short, rounded. Cerci rather long. Subgenital plate lanceolate, produced. Ovipositor narrow, nearly straight. Subgenital plate of female small, the posterior margin broadly emarginate.

Locality.—New Zealand only.

There is considerable confusion among the species of this genus, if, indeed, there are more than one. I shall commence with the only species that has been adequately described, and then point out the characters which may possibly separate the others from it.

Pachyrhamma speluncæ. Plate XIII., figs. 12–12*c*.

Hemideina speluncæ, Colenso, Trans. N.Z. Inst., vol. XIV., p. 280 (1882).

Fastigium rather low. Antennæ long, nearly seven times the length of the body; basal joints cylindrical and nearly glabrous towards the middle, gradually getting swollen distally, and beyond the middle becoming cylindrical and hairy. In the middle each joint is swollen a little below the apex, and in many of the joints the lower side of this swelling bears a short, blunt spine; on the proximal half of the antenna these spines are small or rudimentary; near the middle, joints bearing small spines alternate with joints bearing much larger ones; there are no spines on the distal portion. Inferior margins of the lobes of the pronotum horizontal; the pronotum and mesonotum distinctly margined. Fore femora, below with a row of five spines on the anterior (inner) edge and none on the posterior edge. Middle femora, below, with two or three spines on each edge. Hind femora, below, with eight spines on the posterior (inner) and three on the anterior (outer) edge. Fore and middle tibiæ, below, with four spines in each row, and, in addition, the middle tibiæ have, above, four spines in an anterior and two in a posterior row. Hind tibiæ, above, with 36 spines in the inner and 41 in the outer row; these spines are distant in distal portion but smaller and more crowded in the proximal portion of the tibia. The superior pair of apical spurs are not half the length of the first joint of the tarsus, and the middle pair are not half the length of the superior pair; all of them have numerous long hairs. First joint of the hind tarsus not quite so long as the other three together; the third very short. In the fore and middle tarsi the first joint is longer than the other three together. Lobes of the abdominal terga with distant granulations. Subgenital plate of male with a lanceolate projection between the bases of the styles, which is strengthened by a Y-shaped keel; styles not projecting so far as the apex of the plate. Cerci slender.

Colours.—Pale-tawny; both borders of the pronotum and the posterior borders of the mesonotum, metanotum, and abdominal terga dark reddish-brown, the actual margins being white. Distal portions of the femora dark reddish-brown, with two white bands; tarsi nearly white.

Length, 25mm.; pronotum, 7mm.; thorax, 14mm.; abdomen, 14mm.; fore tibia, 21mm.; hind tibia, 38mm.; hind femur, 32mm. Width at the mesonotum, 9mm.

Locality.—Forty-mile Bush, near the head of the Manawatu River. In limestone caves (Colenso).

The foregoing description is taken from the type specimen, which is a male.

Pachyrhamma novæ-seelandiæ.

Pachyrhamma novæ-seelandiæ, Brunner, Verh. z.-b., Wien, xxxviii., p. 302, pl. vii., fig. 29 (1888).

This species, described from females only, is of the same colours and size as *P. speluncæ*, and the spines on the femora are the same, except that no mention is made of any on the middle femora in *P. novæ-seelandiæ*. It is, however, expressly stated in the generic characters that there are no spines on the upper surface of the fore and middle tibiæ, and no peculiarities in the antennæ are mentioned. From *P. fascifer* it differs only in having four or five spines on the lower surface of the fore femora instead of two, and in no mention being made of the two spines on the lower surface of the middle tibiæ.

Brunner's type is a female, and the figure shows the joints of the antennæ as cylindrical; probably it is the female of *P. speluncæ*.

Pachyrhamma fascifer.

Macropathus fascifer, Walker, Cat. Dermaptera Saltatoria in Brit. Mus., part i., p. 207 (1869); ♂. *Macropathus altus*, Walker, *l.c.*, p. 208 (1869); ♀.

This species has the same colours as *P. speluncæ;* but no mention is made of any peculiarities in the antennæ, nor of any spines on the upper surface of the fore tibiæ. The fore femora are said to have only two spines below, and the middle tibiæ three in each row, while *P. speluncæ* has five and four respectively. *M. fascifer* is said to have the fourth joint of the maxillary palpi much longer than the third, while in *M. altus* the two joints are said to be of equal length. There is no other difference.

Genus Pleioplectron, gen. nov.

Form small and slender. Head vertical. Antennæ thick, closely approximated at their bases; first joint very thick; the second much shorter, inflated; the third not much longer than the second; the rest small, vasiform or cylindrical. Fastigium narrow, rising abruptly, sulcate. Eyes subovoid, not very prominent. Pronotum rounded anteriorly and projecting over the head; posterior margin straight. Legs rather long. Fore coxæ spined, near together but not touching;

metasternum with a small tubercle or ridge; hind coxæ as far apart as the middle coxæ. Fore femora with one and middle femora with two apical spines, hind femora without apical spines. Fore and middle tibiæ with two pairs of apical spines; hind tibiæ with three pairs, of which the superior are acicular, hairy, more than half the length of the first joint of the tarsi; the middle pair about half the length of the superior pair, the inferior pair quite small; spines on the upper surface irregular in size, none beneath. First and second joints of hind tarsi with an apical pair of small spines; the first joint longer than the other three together, and with some minute spines on its upper surface. Supra-anal plate transverse, the apex truncated, with a small point in the middle. Cerci rather short, slender, depressed. Subgenital plate of the male longer than broad, cuspidate, terminating in an acute point between the styles; that of the female short, the apex with three points.

Locality.—New Zealand only.

KEY TO THE SPECIES.

a. Joints of antennæ vasiform in the male.	
Fore and hind tibiæ with two or three spines in the inner row	*P. simplex.*
Fore and hind tibiæ with one spine in the inner row	*P. hudsoni.*
aa. Joints of the antennæ cylindrical.	
Mid tibiæ unarmed above	*P. pectinatum.*
Mid tibiæ with three or four spines above ..	*P. diversum.*

Pleioplectron simplex, sp. nov. Plate XIII., figs. 13–13*c*.

Antennæ about three and a half times the length of the body, closely covered with hairs; the joints in the male vasiform, each narrowing towards its base; the proximal joints rather broader than long. Thoracic nota very slightly bordered. Legs covered with short hairs, except the hind femora. Fore and middle femora unarmed below; hind femora with two minute spines near the distal end. Fore tibiæ, below, with three spines in each row, none above. Middle tibiæ, below, with two or three spines in each row, none above. Hind tibiæ flattened above, with about twenty-nine spines in the outer (anterior) and about seventeen in the inner (posterior) row, irregular in size, some very small. Subgenital plate in the male longer than broad, triangular between the insertions of the styles, slightly keeled near the apex. In the female the three apical points are nearly in the same line. Ovipositor rather slender.

Colours.—Fuscous, variegated with paler, a pale longitudinal line on the pronotum; antennæ fuscous; fore and middle femora and all the tibiæ transversely banded; the tarsi pale.

Length, 16mm.; pronotum, 4mm.; thorax, 8mm.; abdomen, 10mm.; ovipositor, 11mm.; fore tibia, 7mm.;

hind tibia, 14mm.; hind femur, 13mm. Width at the mesonotum, 5mm.

Localities.—North Canterbury and Banks Peninsula. Among dead wood; not uncommon.

The female is considerably smaller than the male; the antennæ are relatively thinner, and the joints are cylindrical.

Pleioplectron hudsoni, sp. nov. Plate XIII., figs. 14, 14*a*.

Joints of the antennæ vasiform, sparingly clothed with hairs, the proximal ones broader than long. Thoracic nota slightly margined. Legs long, covered with short hairs. Fore and middle femora unarmed below; hind femora with two minute spines on the inner edge, nearly central. Fore tibiæ, below, with one anterior (inner) and two posterior (outer) spines, none above. Middle tibiæ, below, with two anterior (outer) and one posterior (inner) spines, none above. Hind tibiæ slightly grooved above, with about eight outer and twelve inner spines, and several minute teeth between them. Subgenital plate longer than broad, with the keel projecting forwards into a sharp narrow point.

Colours.—Reddish-brown, the legs transversely banded with paler.

Length, 12mm.; pronotum, 5mm.; thorax, 8mm.; abdomen, 3mm.; fore tibia, 9mm.; hind tibia, 16mm.; hind femur, 14mm. Width at mesonotum, 5mm.

Locality.—Wellington (Hudson).

Described from a single male; the female is unknown.

Pleioplectron pectinatum, sp. nov.

Joints of the antennæ cylindrical, sparingly covered with hairs, the proximal joints very short, much broader than long. Pronotum and mesonotum slightly margined. Fore and hind femora unarmed below; hind femora, below, with two minute spines on the inner edge near the distal end. Fore and middle tibiæ with two spines in each row below, none above. Hind tibiæ slightly grooved above, with about twenty-five spines in each row, irregular in size, some of them very small. Subgenital plate transverse, with a narrow keel ending in a point.

Colours.—Fuscous, the face and palpi pale; antennæ fuscous; a pale longitudinal line on the pronotum; femora and tibiæ of fore and middle legs pale, transversely banded with fuscous; tarsi of the fore legs pale-tawny, those of the middle and hind legs fuscous.

Length, 15mm.; pronotum, 5mm.; thorax, 7mm.; abdomen, 7mm.; fore tibia, 7mm.; hind tibia, 14 mm.; hind femur, 12mm. Width at mesonotum, 5mm.

Locality.—Banks Peninsula.

Described from two male specimens.

Pleioplectron diversum, sp. nov. Plate XIII., figs. 15–15*b*.

Joints of the antennæ cylindrical, closely covered with hairs, the proximal joints longer than broad. All the thoracic nota thickly margined. Legs hairy. All the femora unarmed below. Fore femora with a pair of short apical spines; those on the middle femora longer than usual. Fore tibiæ, below, with two anterior (inner) and three posterior (outer) spines; none above. Middle tibiæ, below, with three spines in each row; above, armed with a row of four spines. Hind tibiæ flattened above, with about twenty-five spines in each row, irregular in size, some of them very small. First joint of the hind tarsi considerably longer than the other three together; the third less than half the second. Subgenital plate of the female with three points, the middle one projecting much beyond the laterals.

Colours.—Dark-brown, variegated with paler; fore and middle femora and all the tibiæ transversely banded; tarsi of fore and middle legs tawny, those of the hind legs dark-brown.

Length, 17mm.; pronotum, 4mm.; thorax, 8mm.; abdomen, 8mm.; ovipositor, 12mm.; fore tibia, 7mm.; hind tibia, 15mm.; hind femur, 13mm. Width at the mesonotum, 5mm.

Locality.—Upper Wanganui (S. H. Drew).

Described from a single female individual.

The two spines on the fore femora of this species would place it in *Neonetus*, but the apical spines of the fore and middle tibiæ, and the subgenital plate of the female, show that it is nearer to *Pleioplectron*. The spines on the upper surface of the middle tibiæ are very unusual.

Genus Neonetus, Brunner. (1888.)

Form small and stout. Head vertical. Fastigium rising abruptly, slightly sulcate. Antennæ long, rather slender, closely approximated at their bases in the female, rather distant in the male; the first joint very broad, flattened, the rest much shorter. Eyes large, semicircular, very prominent. Pronotum rounded anteriorly and projecting over the head; posterior margin straight. Legs moderate. Coxæ of fore legs spined. Fore and middle femora with a pair of acicular apical spines; hind femora without apical spines. Fore tibiæ with a pair of inferior apical spines; no superiors. Middle tibiæ with a pair of superior apical spines; no inferiors. Hind tibiæ with two pairs of apical spines, the superior much longer than the inferior. First and second joints of hind tarsi with a pair of small apical spines. Cerci short and robust. Subgenital plate in the male long, boat-shaped, strongly keeled, the styles inserted at the base of the plate. In the female it

is narrow, cuspidate, with a sharp point. Ovipositor large, much compressed.

Locality.—New Zealand only.

Neonetus variegatus. Plate XIII., figs. 16–16*c*.

Neonetus variegatus, Brunner, Verh. z.-b., Wien, xxxviii., p. 300, pl. vii., fig. 27 (1888).

Antennæ very hairy, the first joint longer than broad, the third shorter than the second. Thoracic nota margined at the sides. Legs moderately hairy. Fore and middle femora unarmed below; hind femora, below, with five or six small spines on the inner edge and eight or nine minute spinelets on the outer edge. Fore and middle tibiæ, below, with two spines in each row, unarmed above. Hind tibiæ grooved above, with twenty to twenty-two small spines in each row, rather irregular in size; the superior pair of apical spurs twice as long as the inferior pair, rather more than half the length of the first joint of the tarsus. First joint of the hind tarsi shorter than the other three together. Subgenital plate of the male rounded at the point, the styles slender, reaching rather beyond the end of the plate.

Colours.—Above brown, variegated with paler; below tawny. A dark lateral streak on the thorax and abdomen, passing above the margins of the thoracic lobes, which are pale; legs banded dark and light.

Length, 10mm.; pronotum, 3mm.; thorax. 6mm.; abdomen, 3mm.; ovipositor, 8mm.; fore tibia, 6mm.; hind tibia, 12mm.; hind femur, 10mm. Width at mesonotum, 4mm.

Locality.—Auckland, under the bark of trees; common.

Mr. Brunner's description, if it may so be called, is quite insufficient for recognition, so I have taken the commonest species to represent it.

Neonetus pilosus, sp. nov. Plate XIII., fig 17.

Antennæ very hairy; the third joint about as long as the second. Thoracic nota margined. Legs very hairy; fore and middle femora unarmed below; hind femora, below, with about eight minute spines on each edge. Fore and middle tibiæ, below, with one spine on the anterior and two on the posterior side. Hind tibiæ sulcate above, with about twenty-four spines in each row, rather irregular in size; apical spurs as in *N. variegatus*. Subgenital plate in the male more pointed than in *N. variegatus*, and the keel not extending beyond the bases of the styles.

Colours.—Above dark reddish-brown; lower portions of the lobes of the thoracic nota and the legs testaceous; the legs banded with brown.

Length, 11mm.; pronotum, 4mm.; thorax, 7mm.; abdomen, 5mm.; fore tibia, 6mm.; hind tibia, 11mm.; hind femur, 10mm. Width at the mesonotum, 4mm.

Locality.—Wellington, in old burrows of *Hepialus virescens* (Hudson).

Much more hairy than *N. variegatus*. Described from a single male specimen.

Genus Isoplectron, gen. nov.

Form small, rather robust. Head vertical. Antennæ rather slender, not very hairy, about three times the length of the body, rather distant at their insertions; the first joint broader than long; the second nearly as long as the third; the others short, cylindrical. Fastigium low, slightly sulcate. Eyes large, pyriform. Pronotum projecting slightly over the occiput. Legs moderate, hairy, except the hind femora, which are glabrous and much swollen. Fore coxæ spined. Fore and hind femora without apical spines; middle femora with a small inner apical spine. Fore and middle tibiæ with an inferior pair of apical spines; those of the middle legs with a single superior apical spine also, on the posterior side. Hind tibiæ with two pairs of apical spurs, subequal in length, the largest considerably less than half the length of the first joint of the tarsus. First and second joints of the hind tarsi terminated above by two short spines; the first joint about equal to the other three together. Supra-anal plate transverse, truncated at the apex. Cerci stout. Subgenital plate in the male triangular, slightly keeled, the styles inserted on each side of the base. Subgenital plate in the female short, rounded, emarginate. Ovipositor large, deep, serrated near the point on both edges.

Isoplectron armatum, sp. nov. Plate XIII., figs. 18–18*b*.

Lobes of the pronotum horizontal, not margined. Legs very hairy. Fore and middle femora unarmed below; hind femora much dilated, armed below with two strong curved spines, and some smaller ones on the inner edge near the middle. Fore and middle tibiæ unarmed below and above. Hind tibiæ flattened above, with about fifteen spines in each row, irregular in size. Supra-anal plate with a circular fovea on each side, near the insertion of the cerci. Subgenital plate of the male with short styles which do not quite reach the apex of the plate.

Colours.—Pale-tawny, finely marbled with purplish-fuscous, and with two longitudinal lines of the same colour on the face; antennæ tawny.

Length, 12mm.; pronotum, 4mm.; thorax, 7mm.; abdo-

men, 7mm.; fore tibia, 6mm.; hind tibia, 12mm.; hind femur, 12mm. Width at the mesonotum, 4mm.

Locality.—Dunedin.

Isoplectron calcaratum, sp. nov. Plate XIII., figs. 19–19*b*.

Lobes of the pronotum horizontal, not margined. Legs very hairy. Fore and middle femora unarmed below; hind femora much dilated, armed below with a single long nearly straight spine on the inner edge beyond the middle. Fore tibiæ, below, with one pair of minute spines in the male, two pairs in the female. Middle tibiæ, below, without spines in the male, or with two small pairs in the female: all these spines are almost hidden by the hairs. Hind tibiæ flattened above, with ten or twelve spines and some small spinelets in each row. Subgenital plate in the male with the styles long, projecting beyond the apex of the plate.

Colours.—Pale-tawny, finely marked and dotted with brown.

Length, 13mm.; pronotum, 3mm.; thorax, 6mm.; abdomen, 6mm.; ovipositor, 7mm.; fore tibia, 4mm.; hind tibia, 8mm.; hind femur, 8mm. Width at mesonotum, 4mm.

Localities.—Wellington, in blossoms of *Metrosideros scandens* (Hudson). North Canterbury, among dead wood.

Genus Pharmacus, Pictet and Saussure. (1891.)

Form slender. Head vertical; antennæ thick, hairy, rather distant at their insertions. Fastigium narrow, deeply sulcate. Eyes ovoid, their internal margins straight. Pronotum rounded anteriorly, projecting over the occiput; the posterior margin straight, the posterior angles slightly rounded. Sternum rather broad. Legs long and slender, hairy, except the hind femora. Coxæ separated from each other, those of the fore legs spined. All the femora without apical spines. Fore and middle tibiæ with an inferior pair of apical spines, and a single superior one on the posterior side. Hind tibiæ unarmed below; the apical spurs are two pairs, the superior of which are not twice as long as the inferior and less than half the length of the first joint of the tarsus. First and second joints of the hind tarsi terminated above by two short spines. Supra-anal plate large and rounded, passing the cerci, which are moderate. Subgenital plate in the male longer than the pronotum, triangular, slightly keeled; the styles large, cylindrical, inserted before the middle of the plate.

Female unknown.

This description is taken from Messrs. Pictet and Saussure, but has been added to by some details kindly sent me by M. Pictet.

Pharmacus montanus.

Pharmacus montanus, Pictet et Saussure, Bull. de la Soc. Entomol. Suisse, tome viii., p. 304 (1891).

Legs very long; fore and middle femora unarmed below; hind femora but slightly dilated, armed below with one or two small spines on the inner edge. Fore and middle tibiæ, below, with three pairs of small spines; unarmed above. Hind tibiæ, above, with sixteen to eighteen spines in each row, the largest apical spur not passing the middle of the first joint of the tarsus.

Colours.—Black above, testaceous below.

Length of body, 11mm.; of pronotum, 3·5mm.; of hind femur, 10mm.

Locality.—Mount. Cook, at a height of 7,000ft. (G. E. Mannering.)

I have seen no specimen.

Genus MACROPATHUS, Walker. (1869.)

Form rather slender, with very long legs. Antennæ very long and thick, hairy; the first joint very large, as broad as long; the second short and swollen; the third cylindrical, longer than the first; the others short, cylindrical. Fastigium high, deeply sulcate. Eyes small, narrowly oval, not projecting so much as the genæ; situated, with the antennæ, in a depression; front very prominent below the antennæ. The three last joints of the maxillary palpi about equal. Pronotum rounded in front, projecting over the head. Sternum narrow. Fore coxæ not spined; the two approximated but not touching. None of the femora with apical spines. Fore and middle tibiæ each with a pair of inferior spines, and a single superior one on the posterior side. Hind tibiæ with three pairs of apical spines, of which the superior are the longest and the inferior the shortest, the superior about twice as long as the intermediate, but less than half the length of the first joint of the tarsus. First joint of the hind tarsi elongated, longer than the other three together, armed above with several minute spines in addition to the apical pair; the third joint well developed. Subgenital plate of the male triangular, the styles inserted at the base.

I have had to reconstruct this genus in order that it may be understood. It is very different from *Pachyrhamma*, but closely allied to *Pharmacus*.

Macropathus filifer. Plate XIII., figs. 20, 20*a*.

Macropathus filifer, Walker, Cat. Dermaptera Saltatoria in the Brit. Mus., part i., p. 206 (1869). (?)*Pachyrhamma edwardsii*, Brunner, Verh. k. k., Zool. and Bot., Gesellsch. in Wien, xxxviii., p. 302 (1888).

Antenuæ very long, nine or ten times the length of the body. The vertex roughened; face hairy. Pronotum smooth, slightly margined in front and at the sides, inferior margins of the lobes horizontal, lateral grooves obsolete. Legs very hairy. Fore and middle femora unarmed below; hind femora, below, with six small spines on the inner and two on the outer edge near the middle; middle femora slightly grooved below. Fore and middle tibiæ, below, with three spines in the inner and four in the outer row; unarmed above. Hind tibiæ flattened above, about thirty spines in the outer and twenty-five in the inner row, irregular in size, some very minute; unarmed below. In addition to the apical pairs of spines, the first joint of the hind tarsi has several and the second joint one pair of minute spines on the upper surface.

Colours.—Brownish-red, the palpi and tarsi pale-yellow.

Length, 17mm.; pronotum, 5mm.; thorax, 9mm.; abdomen, 8mm.; fore tibia, 12mm.; hind tibia, 23mm.; hind femur, 21mm. Width at mesonotum, 5mm.

Locality.—Near Mount Arthur, Nelson, in limestone caves.

This description is from a male presented to the Museum by Mr. G. V. Hudson; I have not seen the female.

Mr. Brunner's specimens are larger and rather different in colour, being brownish-yellow spotted with chestnut, and the posterior margin of each segment pale. I think, from his very short description, that it is the same as *M. filifer*, but the length of the hind tibia, being 5·7 times the length of the pronotum, is more like *M. edwardsii*.

Macropathus edwardsii.

Hadenœcus edwardsii, Scudder, Pro. Boston Soc. of Nat. Hist., vol. xii., p. 408 (1869). (?)*Ceuthophilus lanceolatus*, Walker, Cat. Dermaptera Saltatoria in the British Museum, pt. i., p. 204 (1869).

Antennæ between five and six times as long as the body. Legs longer than in the last species. All the femora unarmed below.

Colours.—Dark-brown, with the palpi and tarsi pale.

Length, 22mm.(?); pronotum, 6mm.; thorax, 11·5mm.; fore tibia, 23mm.; hind tibia, 40mm.

Locality.—Collingwood, near Nelson, in limestone caves. (Edwards.)

I have not seen this species, but the absence of spines from the hind femur and its great length of leg seem to distinguish it from the last.

EXPLANATION OF PLATES XII., XIII.

PLATE XII.

Fig. 1. *Deinacrida heteracantha*, supra-anal plate.
Fig. 1*a*. „ subgenital plate of male.
Fig. 1*b*. „ subgenital plate of female.
Fig. 1*c*. „ sternum.
Fig. 2. *Deinacrida rugosa*, subgenital plate of female.
Fig. 3. *Hemideina megacephala*, supra-anal plate.
Fig. 3*a*. „ subgenital plate of male.
Fig. 3*b*. „ subgenital plate of female.
Fig. 3*c*. „ sternum.
Fig. 4. *Hemideina femorata*, subgenital plate of male.
Fig. 4*a*. „ subgenital plate of female.
Fig. 4*b*. „ side view, showing sounding organ.
Fig. 5. *Onosandrus focalis*, supra-anal plate.
Fig. 5*a*. „ subgenital plate of male.
Fig. 5*b*. „ subgenital plate of female.
Fig. 5*c*. „ hind tarsus
Fig. 5*d*. „ side view, showing sounding-organ.
Fig. 6. *Onosandrus pallitarsis*, subgenital plate of male.
Fig. 6*a*. „ subgenital plate of female.
Fig. 7. *Talitropsis sedilotti*, subgenital plate of male.
Fig. 7*a*. „ subgenital plate of female.
Fig. 8. *Talitropsis crassicruris*, subgenital plate of male.
Fig. 8*a*. „ apex of hind tibia.
Fig. 9. *Talitropsis irregularis*, subgenital plate of male.
Fig. 10. *Ischyroplectron isolatum*, subgenital plate of male.
Fig. 10*a*. „ apex of fore femur.
Fig. 11. *Gymnoplectron longipes*, subgenital plate of male.
Fig. 11*a*. „ apex of fore femur.

PLATE XIII.

Fig. 10*b*. *Ischyroplectron isolatum*, sternum.
Fig. 11*b*. *Gymnoplectron longipes*, sternum.
Fig. 12. *Pachyrhamma speluncæ*, supra-anal plate.
Fig. 12*a*. „ subgenital plate of male.
Fig. 12*b*. „ sternum.
Fig. 12*c*. „ portion of antenna.
Fig. 13. *Pleioplectron simplex*, supra-anal plate.
Fig. 13*a*. „ subgenital plate of male.
Fig. 13*b*. „ subgenital plate of female.
Fig. 13*c*. „ apex of fore femora.
Fig. 13*d*. „ apex of hind tibia.
Fig. 13*e*. „ portion of antenna.
Fig. 14. *Pleioplectron hudsoni*, subgenital plate of male.
Fig. 14*a*. „ portion of antenna.
Fig. 15. *Pleioplectron diversum*, subgenital plate of male.
Fig. 15*a*. „ portion of antenna.
Fig. 15*b*. „ subgenital plate of female.
Fig. 16. *Neonetus variegatus*, subgenital plate of male.
Fig. 16*a*. „ subgenital plate of female.
Fig. 16*b*. „ apex of fore femur.
Fig. 16*c*. „ apex of hind tibia.
Fig. 17. *Neonetus pilosus*, subgenital plate of male.

PLATE XIII.—*continued.*

Fig. 18. *Isoplectron armatum*, supra-anal plate.
Fig. 18*a*. „ subgenital plate.
Fig. 18*b*. „ hind femur.
Fig. 19. *Isoplectron calcaratum*, hind femur.
Fig. 19*a*. „ apex of hind tibia.
Fig. 19*b*. „ subgenital plate of female.
Fig. 20. *Macropathus filifer*, subgenital plate of male.
Fig. 20*a*. „ portion of antenna.

ART. XV.—*Note on the* Mantis *found in New Zealand.*

By Captain F. W. HUTTON, F.R.S., Curator of the Canterbury Museum.

[*Read before the Philosophical Institute of Canterbury, 4th November, 1896.*]

ONLY one species of *Mantis* is known to me in New Zealand, which is the following:—

Orthodera ministralis, Fabricius.

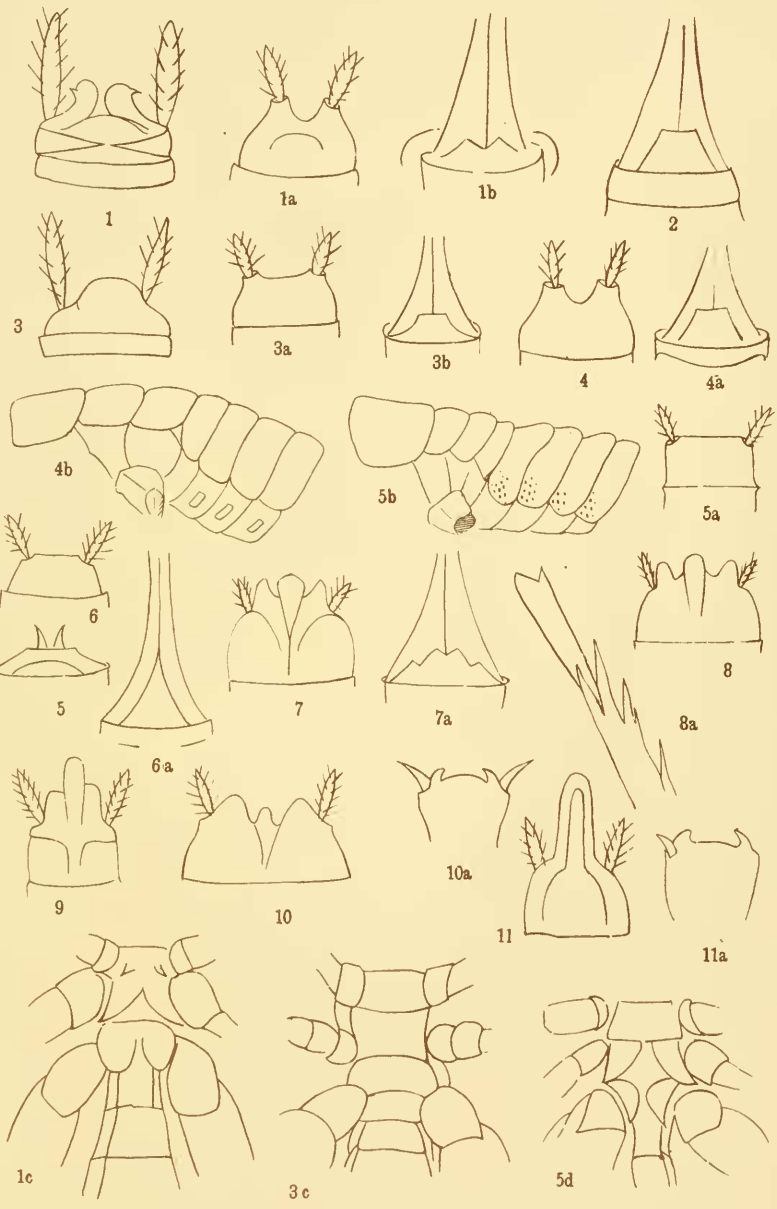
Orthodera prasina, Burmister, Handbook, ii., p. 526 (1839). *Mantis rubrocoxata*, Serville, Orthoptères, p. 203 (1839). *Bolidena hobsonii*, Blanchard, Voy. "Astrolabe" et "Zelée," Zool., iv., p. 356, pl. i., fig. 7 (1853). *Orthodera prasina*, H. de Saussure, Mel. Orthop. Mantides, p. 163 (1870). *Mantis novæ-zealandiæ*, Colenso, Trans. N.Z. Inst., vol. xiv., p. 277 (1882). *Mantis*, sp., Potts, Trans. N.Z. Inst., vol. xvi., p. 114 (1884). *Tenodera intermedia*, Hudson, Man. N.Z. Entomology, p. 109, pl. 17, fig. 2 (1892).

Inhabits Eastern Australia and Tasmania.

In this species the pronotum is rather broad, roof-shaped, and gradually getting broader towards the anterior end, which is truncated. It is also easily recognised by the black spot bordered with blue, on the inner side of each anterior femur.

The Rev. W. Colenso says that he first saw this insect at Napier in 1878. He had long been on the lookout for a New Zealand *Mantis*, as Dr. Sinclair had taken egg-cases to England nearly forty years before.* It does not appear to have reached Wellington in 1891, for Mr. G. V. Hudson thought that the species was confined to the South Island, his specimens having been obtained in Nelson. I never saw it in Auckland or the Waikato, where I lived from 1866 to 1870, but a specimen was sent me from Auckland about ten years ago.

* See Dieffenbach's "New Zealand," vol. ii., p. 280.



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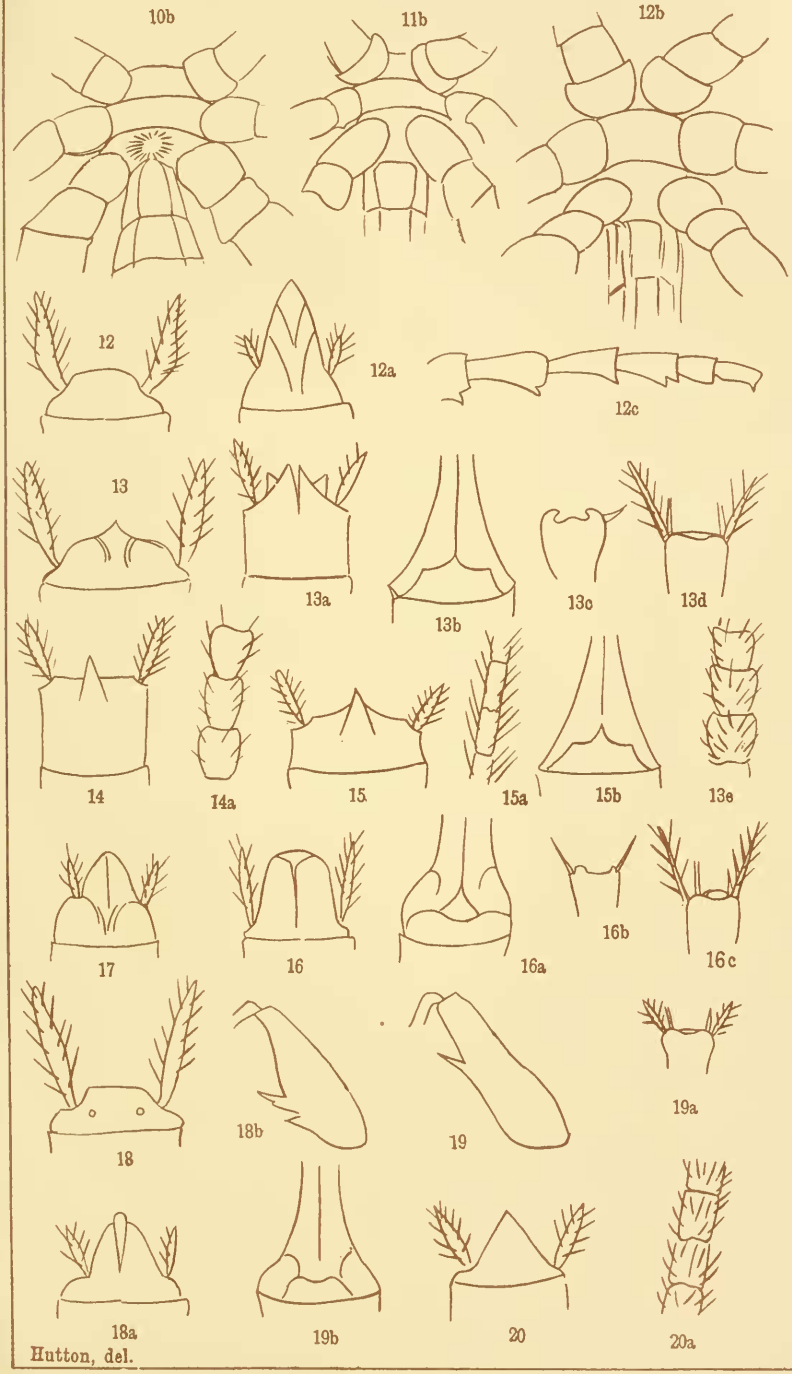

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